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Dominic Lal April 13, 2021

Racial Bias and Occupation

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Abstract
Race and Occupation

By Dominic Lal

Social preference and racial bias are ubiquitous, yet the question of their origins and development remain open. In this study, we examined 6-9 year-old children (N=36) on their racial preferences for adults of varying professions: teacher, doctor, police officer, and in an additional control condition with no professional label offered to the child. The children were about equally distributed across Black, White, and Other races. Variation in skin tone was used as a proxy of race within a preferential sorting task paradigm. Results show that in the no-professional label control condition, Black children preferred an individual with darker skin when compared to either White or Other race children. However, in the 3 other occupation labeled conditions, children of all ethnicities demonstrated comparable preferences, with no significant effects of gender or age. We interpret these results in light of enhanced stereotype threat and positive attribute disassociation in Black children regarding adult professional occupations.

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Introduction

This project stems from my interest in developmental psychology, pediatrics, and racial bias. As an aspiring pediatrician, I have frequently thought about the relationship that takes place between physicains and children. Specifically, I wondered how kids relate to physicians of various races. When discussing racial biases it is common for individuals to think about adult's biases and the role they play in relationships. However, I was intrigued to learn more about children's racial biases, and in particular the extent to which children may prefer physicians of the same race as theirs (see Chen et al., 2005). In this study, we use a contextualized preferential sorting task paradigm with skin tone as a proxy for race to better understand how children perceive and may show preferences for adults through the lenses of occupation and race.

Social Categorization

Social Categorization – as the way we think about people and their group memberships – appears to develop early in life. This phenomenon begins as early as infancy and continues to develop throughout childhood (Rhodes & Baron, 2019). Social categorization is crucial for children to explore the world and navigate social relationships by grouping individuals into categories like gender, race, and occupation. Along with the grouping of individuals, comes the formation of biases towards the in-group. By using a violation-of-expectation experiment, Jin & Baillargeon (2017) presented 17-month infants with third party interactions of adults of the same group (novel label of "tigs") and different groups (novel labels of "tigs" and "bems"). They found that infants by the middle of the second year tend to look significantly longer at the scenario where individuals of the same group ignore compared to a scenario where individuals of the same group help each other. However, alternative conditions between individuals of two different groups or unspecific groups did not show children have any expectation of helping.

These findings suggest that in-group preference develops early in childhood (Jin & Baillargeon, 2017). Racial biases have been of particular importance within social categorization as it has been shown to have unique developmental patterns in children.

Development of Racial Preference in Early Childhood

In a seminal and highly influencial study, Clark and Clark (1940) asked 3-7 year-old African American and European American children to choose either a Black or White doll to identify racial preference. Based on this forced choice paradigm, they found that when European American children were presented with two dolls of varying skin tones (Black and White), children preferred the White doll to align with the in-group bias. However, when African American children were presented with two dolls of varying skin tones (Black and White), no in-group preference was observed (Clark and Clark, 1940). This finding suggest that racial bias develops early in childhood and that the development is unique within minority and majority identities. In the 1970's, the social identity theory emerged to state that individuals preferred their in-group because of motivational factors. Individuals have a motivation to enhance their own self-image by finding positive attributes in people like them (in-group) and negative attributes in people that are not like them (out-group). Although this theory stands true for White children, additional research needs to be conducted to better understand why there is an alternative trend in African American children.

Strikingly, after nearly 80 years, a similar phenomenon to the one noted in the Clark and Clark doll studies revealed an absence of racial in-group preference within African American children (Gibson et al., 2015). A preferential sorting paradigm on dolls of varying skin tones revealed that African American preschoolers, aged 3-5, showed no racial in-group preference. Additionally, they found that a slight majority of African American preschool-aged children

have a preference for a White doll over a Black doll, despite a significant majority of children identifying themselves and their friends as resembling the Black doll. Interestingly, this phenomenon of an absence of racial in-group preference in African American children was replicated in older children aged 5-7 as well (Gibson et al., 2015).

Both Clark and Clark (1940) and Gibson et al. (2015) use proximal questions to probe for racial preference. Specifically, Clark and Clark asked children to identify which doll they like the most and Gibson et al. asked children to identify which doll looked like them. Although these questions provide curcial insight into a child's proximate environment, they do not take into consideration context. The aim of this project is to expand on this current body of literature by understanding how children perceive adults within the context of occupation.

Between the ages of 4 to 9, European American children were more likely to associate lighter skin with positive characteristics (Bigler and Liben, 1993). However, contrary to the social identity theory, 4- to 7-year-old African American children do not associate darker skin tone with positive characteristics (Averhart and Bigler, 1997). This is significant as it provides a point of divergence between the preferential perception of race in Black and White children. When 7- to 11-year-old White and Black American children were given Implicit Association Tests (IATs), White children showed a prominent in-group bias (Newheiser and Olson, 2013). However similarly to prior findings, Black children showed no in-group or out-group bias. Additionally, they found a trend where Black children showing explicit preference for high status , in the form of liking rich or poor people, predicted implicit outgroup bias (Pro-White preference). This finding supports the notion that children as young as 7 process racial preference through interpersonal lenses like social status. In the context of the present study, this finding provides support for the importance of studying bias within interpersonal interactions of

occupation at the age of 7. The formation and concept of these identities have been found to be shaped by a child's immediate environment as variables like parent socialization have been implicated in shaping racial bias (Gibson & Rochat, 2015). However, ecological systems have suggested that children are interacting with the environment at multiple levels beyond the proximate level (Bronfenbrenner, 1994).

Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's ecological theory defines child development as a dynamic system influenced by varying degrees of the child's surrounding environment. He argued that it is crucial not to study the child's exclusively in reference to their immediate, proximal family environment, but also to the broader, more distal aspects of their environment such as school and society as well as their cultural niche in general. Bronfenbrenner divided the environment into 5 systems comprising of the microsystem, mesosystem, exosystem, macrosystem, and the chronosystem. The microsystem is described as a child's immediate environment and typically comprises of interactions with family, peers, and caregivers. The mesosytem includes the interactions between different parts of a child's microsystem. For example, this system comprises the relationship between a child's identity and their relationship with their doctors. The exosystem is the layer that comprises a relationship between a setting that does not directly involve the child, but may have an impact on children. A common example could be a parent's workplace that may positively or negatively impact parental mood, which impacts children. The ecological systems theory also includes the macrosystem, which includes children's cultural patterns, values, beliefs, and political systems. Lastly, the chronosystem encompasses time to describe the impact of change and constancy within a child's environment. In terms of the current study, prior research has focused on the microsystem by studying the uni-directional

impact of adult's racial biases on children (Gilliam et al., 2016; Johnson et al., 2016; Goff et al., 2014). However, Bronfenbrenner's ecological theory states that relationships in the microsystem are bi-directional, supporting the claim that children's biases may impact adults as well. This suggests that further research needs to be conducted to better understand the relationships between children and their caretakers.

It is also important to note that much of the prior research on the development of racial preferences in children have focused on the factors within the microsystem – the child's immediate environment (Bronfenbrenner, 1994). For example, prior research has been conducted to identify that parental racial attitudes, school composition, and age have an impact on the strength of pro-Black bias (ingroup) among African American children (Gibson et al., 2017). However, little research has been conducted to understand how the mesosystem – connections between structures of a child's microsystem (home and teacher/home and doctor/home and police officer) - may shape racial preference in children (Bronfenbrenner, 1994). It is possible that at the proximal level of racial bias, children may show a certain bias towards or away from in-group, however at the mesosystem level they may adopt a different preference. The aim of this study is to explore the mesosystem by considering the factor of occupation in the development of children's racial preferences.

Adult's Racial Biases within Occupational Roles

To probe for the mesosystem this study analyzed children's perception of teachers, doctors, and police officers. These professions were chosen because most children interact with, learn from, or see these individuals in their day to day lives (Gilliam et al., 2016; Johnson et al., 2016; Goff et al., 2014). Prior literature on the interaction between authority figures and children have focused on the biases of adults.

Teachers

Gilliam et al. (2016) tested teacher's perceptions of children by priming them to expect challenging behaviors (although none were present) and showing them video clips of kids playing (either black children or white children). They found that when the race of the teacher and children matched, the teachers rate the behavior as less severe, than if the races did not match. This finding suggests that race plays a role in the perception of children. An additional finding showed that when primed by challenging behaviors, teachers spent more time looking at Black children, especially Black boys (Gilliam et al., 2016). Behavior expectation has been thought to contribute to the disproportionate expulsion and suspension rates of Black children in the United States.

Doctors

Johnson et al. (2016) used Adult and Child Race Implicit Association Tests (IATs) to find that resident physicians have implicit bias against both Black adults and Black children. Furthermore they found that there was no variation in implicit bias across specialties, showing that pediatric residents are just as susceptible to biases against children. Although this study highlights the presence of biases in healthcare, another study on implicit bias and treatment recommendations discusses how implicit biases are impacting in healthcare inequities (Sabin & Greenwald, 2012). Pediatricians were surveyed using race implicit association tests and recommendations for case vignettes on pain management, urinary tract infections, attention deficit hyperactivity disorder, and asthma (Sabin & Greenwald, 2012). They found that pediatricians' implicit biases were correlated with pain management. Specifically, an increasing implicit pro-White bias was correlated with a decreased rate of prescribing narcotic medication

for African American patients, but not White patients. This data highlights the translation of racial bias into healthcare outcomes impacting children.

Police Officers

Lastly, a multiapproach design was used to identify the interaction between police officers' perceptions of Black boys and police officers' violence toward children. Police officers were found to view Black boys as older, less innocent, and less human. The results found that Black children were almost 4x more likely to experience excessive force compared to their White counterparts. This study suggests a correlation between the perceptions and actions of police officers, while discussing the impact it has on youth (Goff et al., 2014).

Children's Perception of Adults

As depicted above, mounting literature suggests that adult's implicit biases are impacting children within educational institutions (teachers), medicine (doctors), and legal fields (police officers) (Cheryl et al., 2017; Johnson et. al., 2016; Goff et al., 2014). Prior literature has found that children as young as 3 and 4 have racial biases with doll studies, stories, and implicit association tests. Despite this large body of literature, little research has been conducted on children's racial implicit bias in terms of the mesosystem.

One study was conducted to better understand children's preference for teachers (Cherng & Haplin, 2016). Students of all races, ages 10-14, had a greater preference for Black teachers over White teaches in a cross-sectional survey. The authors found that this phenomenon stemmed from children's belief that Black teachers were able to foster a more inclusive and open classroom environment. However, further research must be conducted to further probe for this phenomenon and better understand how children interact with adults who are outside of their immediate environment.

The literature has identified a stark variation in the development of implicit biases between African American and European American children. African American children tend to exhibit a transition from a universal pro-White bias towards a pro-Black bias as they get older, whereas White children exhibit a pro-White bias across age development (Gibson et al., 2015). These findings highlight the importance of analyzing children's racial preference development and the factors that may cause variations in trends.

The Current Study

In this study, we sought to examine the role occupation plays in children's implicit biases. Additionally, we sought to better understand the variation in age-related bias development between Black, White, and Other race children. Skin tone is used as a proxy for race in the present study (Gibson & Rochat, 2015). The advantages of using skin tone as a proxy for race include (1) being able to quantify skin tone systematically and (2) overcoming the subjective nature of race a societal construct. The skin tone gradient was generated from the dermatologically accepted Fitzpatrick skin type scale (Fitzpatrick, 1988). The main advantage of using this method was our ability to create a skin tone gradient that resembled the human spectrum of color. The mesosystem is defined as the groups and institutions outside the home that influence the child's development (Bronfenbrenner, 1994). Within the mesosystem, we chose to examine police officers, teachers, and doctors because children learn from, or see these individuals in their day to day lives (Cheryl et al., 2017; Johnson et. al., 2016; Goff et al., 2014).

The goal of the current study is to examine 1) if occupation contributes to racial biases in children; 2) if Black children's racial preference varies with age; and 3) whether exposure to professionals of specific skin tones predicts children's racial preference of thirty-six 6- to 9 year old American children from Atlanta, Georgia. Specifically, each child was presented with a

spectrum of six faces varying in skin tone and asked to perform a preferential sorting task for four occupation based conditions including a no occupation, teacher, doctor, and police officer condition (Gibson & Rochat, 2015). We hope the results of the current study can provide insight into the development of racial preference and the effect of occupation on children's preferences in specific conditions.

Hypotheses

1. Based on the existing literature reviewed above (Tajfel and Turner, 1979; Gibson et al., 2015;Bronfenbrenner, 1994**), we hypothesized that there would be an effect of occupation on racial preference.** If occupation does play a role in children's racial preference following the social identity theory, then Black children will have a greater preference for the darker face within the teacher, doctor, and police officer condition compared to the no occupation condition. Additionally, White children will have preference for the light skin faces within the no occupation, teacher, doctor, and police officer conditions (Tajfel and Turner, 1979; Gibson et al., 2015).

2. We also hypothesized that there would be an age effect on racial preference. It was hypothesized that older African American children would show an increased rate of in-group preference (darker face preference) based on prior theories on in-group development in African children (Gibson et al., 2017). It was hypothesized that White children would show an in-group preference across age.

3. We hypothesized that increased exposure to professionals in their racial ingroup would increase their preference towards racial ingroup. For example, it was predicted that African American children who regularly interact with African American physicians are more likely to prefer physicians with a darker skin tone. It was

predicted that children would prefer occupational adults that their parents identified as most representative of the child's exposure.

Methods

Participants

Participants were 6- to 9-year-old (*M* = 90.6 months, *SD* = 10.1) healthy children from metro-Atlanta, GA, recruited from a large Child Study Center database and individual schools. The participants included 18 girls (50.0%), 17 boys (47%), and 1 other (3%) . The sample was 33% Black or African American; 39% White; 6% Hispanic/Spanish/ Latino; 6 % Asian; 14% Two or more races, and 3% Other based on parental report. 1 participants was excluded from the analysis because of parental interruption (*n* = 1). An a priori G* Power 3.1 analysis was run to identify the appropriate sample size. A sample of 108 participants was sufficient to achieve 75% power and a medium effect size (Faul, Erdfelder, Lang, & Buchner, 2007). In a single testing session, all children completed four occupational conditions (no occupation, teacher, doctor, and police officer trials) of the preferential sorting task (within-subject design). All studies were approved by the Emory University Institutional Review Board. The study posed no greater harm than experienced in everyday life outside the laboratory. This was insured by child assent and parental consent. All children were read a short summary of the study and asked to verbally respond if they want to participate or not. Participants were given the opportunity to stop the study and were debriefed following completion. In order to be included in this study all participants must understand the study and be willing to participate.

Materials

The online video communications software Zoom version 5.0.5 was utilized as an online platform to conduct the virtual experimental procedures on children. We used a password-

protected Zoom meeting link in conjunction with an administrator waiting room to ensure confidentiality. All sessions were video recorded for coding purposes by the Zoom recording feature. The singular camera view facing the child was used to record and code participants' behavior.

All data was recorded through Qualtrics research services. Informed consent forms were implemented to explain vital information about this study including the title, purpose, procedures, risks, benefits, and researcher information. Additional materials used in this study included the questionnaire and debrief. The questionnaire was composed of a child demographics questionnaire (see Appendix A) and child exposure questionnaire (See Appendix B).

The demographics and background was assessed using a demographics questionnaire (Gibson, Robbins, & Rochat, P, 2015). This 12-item screen asks about the gender, age, and parental occupation (see Appendix A).

Six identical male faces of graded skin color were created with the Chicago Face Database and Adobe Photoshop version 21.0. There were two steps in creating a spectrum of 6 identical faces with varying skin tone, no hair, and similar facial features: a) selecting the stimuli and b) altering the stimuli. The Chicago Face Database was used to select an individual who was racially ambiguous (Ma, Correll, & Wittenbrink, 2015) The database has 58 high-resolution standardized photographs of Black and White males and females between the ages of 18 and 40 years. Additionally, the database provides subjective norming data and objective physical measurements of the images. The norming data provided crucial detail about raters perception of the faces, whereas the physical measurements provided information on the quantitative physical attributes of the faces. The present study defines racial ambiguity by 3 standards: 1) overlapping

facial features (eye shape, nose, lip), 2) hair texture, and 3) skin color based on prior literature(Vargas, 2012). In addition to these standards, we also selected faces that were rated as emotionally neutral. This breakdown allowed us to select BM-204 as the facial stimuli for the present study.

Adobe Photoshop version 21.0 was used to clean up blemishes on face, change the eye color, change the skin tone, and isolate the face from the hair. Physical traits like freckles have been found to be an alternative indicator of race that may confound with our skin tone proxy (Gupta & Sharma, V., 2019). The magic marker tool cleared blemishes to remove physical traits of freckles. The sclera of the eye was slightly darkened to decrease the contrast between the eye and skin color exhibited in the darker skin toned stimuli. The same sclera color was selected as a control across all 6 stimuli. The Fitzpatrick Skin Scale was utilized to produce 6 skin tones from the original image. The eyedropper tool in Photoshop provided a quantitative measure of the Red-Green-Blue spectrum of the 6 specific colors. The same numerical values of R-G-B were applied to the photoshop image of the individual faces to create a spectrum of 6 skin tones. Lastly, the faces were cropped into an oval that excluded any hair because hair is known to be an additional proxy for race.

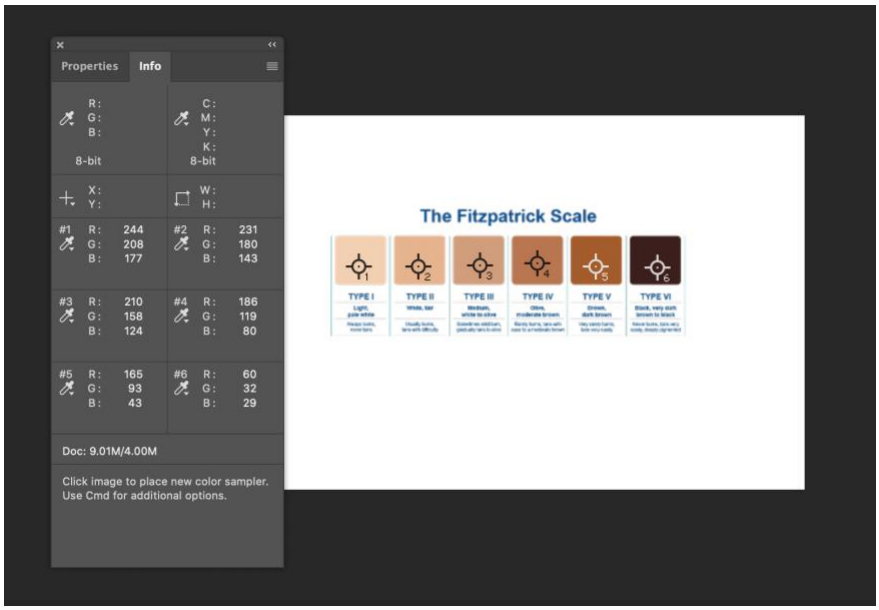

Figure 1. The eyedropper tool sampled the skin tones of the Fitzpatrick Scale to transition onto the stimuli. This tool provided the quantitative values of R-G-B.

A B C

Figure 2. Panel A is the unaltered image of BM-204 from the Chicago Face Database. Panel B is the altered facial stimuli with touch ups to the blemishes, changes to the sclera, and alterations in skin color. Panel C has the hair removed from the image.

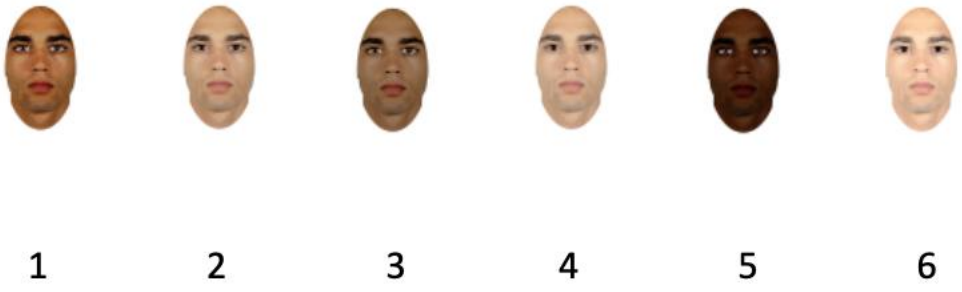

Figure 3. A randomized order of the various skin tone stimuli.

Procedure

Participants completed all behavioral task in a quiet and isolated room in their homes or with headphones on. In a single-30 minute testing session, participants completed preference rankings across four conditions of no occupation, teacher, doctor, and police officer. This within-subject design counterbalanced the order of tasks across participants. One experimenter tested all participants virtually.

Measures

Preferential Sorting Task

The preferential sorting task was described by Dr. Gibson, Dr. Robbins, and Dr. Rochat in their study on *White Bias in 3-7-Year-Old Children across Cultures* (2015). In their study five dolls of graded skin color from light to dark were presented to the child in a random sequence. The children were asked: (1) Are these dolls different?; (2) What is different about them; (3) Which one do you like the most?; (4) Why is that one your favorite?; (5) Which one is like you? (the identity question). Then the children were presented with the preferential sorting task. The child was asked to select the doll that they most preferred and explain why. Their selected doll

was removed from the line-up and the child was then asked to select the one they preferred among the remaining dolls. This continued until sorting was exhausted with the last pair compared. This created a rank ordering of the dolls from the most preferred (1st choice) to least preferred (5th choice).

The present study adopted a modified version of the original study where children were asked to analyze pictures of real humans (not dolls), look at six pictures (not five), and go through five separate preferential sorting trials (foods/people/doctors/teachers/police officers).

Practice Condition

To acclimate the child to the task, the experimenter played a practice version of the preferential sorting task with foods. The experimenter asked the child to identify and select the food they liked the most until a preferential spectrum was acquired.

No Occupation Condition

In the no occupation condition, children were shown the spectrum of six varying skin toned faces and were told to *look at these people*. They were then asked if these people were the same. After clarifying that the images were different, the children were asked to preferentially sort the images using the method described above. Additionally, if children selected a preference, they were asked why they liked that one the most.

Occupation Conditions

In the occupational conditions, the children were presented with the spectrum of six varying skin toned faces and were told information about the occupation of each condition. In a randomized sequence children were presented with the doctor, teacher, or police officer condition. For example, in the doctor condition, the children were shown the facial stimuli and told that *These are all doctors*. To verify that they understood the profession, children were told

that doctors try to help children feel better with medicine. The children were then asked to preferentially sort the images using the same method described above. The same method was repeated for the teacher and police officer conditions until each occupation was queried once. For further information about the script of this study see Appendix E.

Child's Rating of Racial Identity

In the identity condition, each child was presented with a randomized order of 6 faces varying in skin tone and asked to identity the face that was most like them. This allowed for a quantifiable proxy for race through skin tone.

Parental Race Categorization

Parental race categorization for the child was collected via the demographic questionnaire. Race was separated into three categories for analyses: Black, White, and Other. The Other category included categorization as Asian, Native American, Hispanic, Two or more races, and Other.

Exposure Effect

In the parental questionnaire, parents were presented with the 6 skin tone spectrum of faces and asked to identify the skin tone that most resembled their child's doctor, teacher, and police officer. Skin tone was used as a proxy for race in this measure for a child's exposure to adults of the tested occupations.

Risks to participants

In order to reduce all risk, participants and parents of children were given a general overview of what their participation entailed and were debriefed after completion of all tasks. There is no deception involved in this study and at any point participants were free to end their involvement without any loss of benefit. Moreover, after every 20 trials for children, the

experimenter probed whether they want to continue their participation. All data was kept confidential. Individual names of participants were replaced with numbers so as not to connect an individual's identity with the responses collected. As a result of this research, children's parents, teachers, physicians, and police officers will better understand how cultural environments shape the development of intergroup attitudes studying their local community. Upon completion of the study a summary newsletter detailing the findings of this research will be made available to all participants and their families and teachers (for child participants)

Results

Descriptive Information and Preliminary Analyses

Participants were 36 children (18 girls, 17 boys, 1 other) aged 6 years 1 month to 9 years 0 months (M = 90.6 months, SD = 10.1) from metro-Atlanta, GA, recruited from a large Child Study Center database and individual schools. A preliminary mixed design ANOVA, entering the 6 level preference ranking as repeated measure factors, occupation (4 levels: No occupation, Teacher, Doctor, Police officer) and gender (2 levels: Female, Male), revealed that gender did not play a role on racial preference ranking. Meaning that there was no statistical difference between the gender of children and their preference within occupations. The results of the preliminary mixed design ANOVA are presented in Table 1. For further analyses we eliminate gender.

To understand the correlation between parent's racial categorization via parental questionnaire and children's self-rating of racial identity, a Kruskal Wallace non-parametric one-way ANOVA with child's self-identification (6 level: 6 faces of varying skin tones) as a dependent variable grouped by parent's categorization (3 levels: Black, White, Other) was conducted. The analyses yielded a significant relationship between parental categorization and

child's skin tone rating, meaning that the metrics of race and skin tone were correlated, X^2 (2, N=35)=17.6, p<.001 (See Table 2 and Figure 1).

1st Choice Measure

To better understand how occupation and race impacts preference, the following analyses were divided into (1) first choice preference analyses and (2) the preference ranking scale analyses. The first hypothesis predicted that occupation would have an impact on the racial preference chosen by the children. A preliminary Kruskal Wallis non parametric one-way ANOVA, entering racial preference of 1st choice (6 levels: skin tone preference) as dependent variables grouped by occupation (4 levels: control, teacher, doctor, and police officer), yielded no significant main effect of occupation on the racial preference. This means that there was no variation in choice between the occupational groups. The results of the Kruskal Wallis non parametric one-way ANOVA are presented in Table 3.

However a preliminary Kruskal Wallis non-parametric one-way ANOVA, entering racial preference of 1st choice (control, teacher, doctor, and police officer) as dependent variables, grouped by race (Black, White, and Other race) yielded a significant variation only within the control occupation (p=.023). This means that there was a significant variation in preference of Black, White, and Other race children within the control condition, but not within the teacher, doctor, and police officer trials. To further probe for this three-way interaction of race, occupation, and racial preference, Mann-Whitney Non parametric independent sample t-tests were run with 1st choice racial preference (6 levels: 6 faces of varying skin tones) as the dependent variable grouped by race (either Black, White, or Other). The results revealed that in the control condition Black children had a significantly higher preference for darker faces than White children (p=.017). However, Black children showed no significant preference difference

to White children in the teacher, doctor, or police officer trials. When factoring in the Other race category, the data showed that the Other children showed no statistical difference to White children in any of the teacher, doctor, and police officer conditions. However, similarly to White children the Other children varied significantly from the Black children in only the no occupation condition (p=.002). Detailed Mann-Whitney analyses on the first choice ratings of children can be found in Table 4. A depiction of the average first choice racial preference for Black, White, and Other children by occupation can be found in Figure 2.

Rank Measure

When analyzing the preference scale data, a mixed design ANOVA, entering the preference ranking (6 levels: skin tone preference rank of 1st to 6th choice) as repeated measure factors, occupation (4 levels: no occupation, teacher, doctor, police officer) and race (3 levels: Black, White, Other) as between subject factors, and age in months as a covariate, revealed a significant effect of a three way interaction of occupation and race on preference ranking, $F(6, 30) = 1.620$, p=.020 (See Table 5).

To better understand the preference rating scale, Mann-Whitney non-parametric t-tests were run to identify trends with the racial preference rating (6 levels: lightest to darkest faces) as the dependent variable grouped by race (2 levels: Black and White). The data found that within the control condition Black children showed significantly higher 1st choice preference for darker faces compared to White children (p=.005). Additionally, White children are more likely to rank darker faces as their 5th choice faces and Black children are more likely to rank lighter skinned faces as their 5th choices (p=.001). A Bonferroni correction computed a corrected p-value of .008. Although this preference phenomenon is present in the no occupation condition, there is no significant difference in the preference of Black and White kidAs in the occupational conditions

(teacher, doctor, or police officer). A graph depicting the average preference ranking of Black and White children within the no occupation condition shows that Black children show an increased preference for darker faces across the choices (See Table 6 and Figure 3). See Figures 4,5,and 6 and 6 for graphs of average racial preference of races by occupation. Both groups were not statistically different, whereas the Black-other t test showed a significant difference. Black children had a higher preference for faces that were darker compared to children who were White and Other (See Table 7).

Age Effect

It was hypothesized that there would be an age effect on occupation. A mixed design ANOVA, entering the racial preference ranking (6 levels: 1st choice, 2nd choice, 3rd choice, 4th choice, 5th choice, 6th choice) as repeated measure factors, occupation (4 levels: no occupation, teacher, doctor, police officer) and race (3 levels: Black, White, Other) as between subject factors, and age in months as a covariate, revealed no correlation between age in months and racial preference ranking (See Table 5).

Exposure Effect

It was hypothesized that increased exposure to professionals in their racial ingroup would correlate with increased preference towards racial ingroup. A mixed design ANOVA with preference ranking (6 levels: skin tone preference) as a repeated measure factor and occupation (4 levels: no occupation, control, teacher, doctor) with parent's rating of child's exposure (3 levels: skin tone of teachers, doctors, and police officers) found that there was no statistical correlation between a child's exposure and their preference, $F(10, 50) = 0.827$, $p = .793$ (See Table 8). This suggest that our prediction in hypothesis 3 that exposure impacted racial preference was not supported.

Discussion

The current study investigated the relationship between occupation on the racial preference among children in early childhood. It was hypothesized that children are more likely to express an in-group racial preference within occupational conditions compared to the no occupation condition. We predicted that there would be an age effect in Black children whereby with increasing age, Black children are more likely to show an in-group racial preference. Lastly, we predicted that exposure to professionals in their racial ingroup would increase children's preference towards their racial in-group in occupation conditions. The significance of understanding the development of racial preferences through the lens of occupation lies in the fact that children use social categorization as a means of navigating social interactions. The way they perceive others will impact how they interact with them (Rhodes & Baron, 2019). In the context of the mesosystem, it is important to better understand the communication that takes place between children and their educators, doctors, and police officers (Bronfenbrenner, 1994). All of which play a crucial role in the wellbeing of our youth. The current study adds to the existing literature by further exploring the potential links between the mesosystem and racial preferences in children. Additionally, the current study focuses on understanding the nuances of the development of Black children that has previously been found to be different from White children.

The results suggested that our prediction of a main effect of occupation was not supported by 1st choice measures or rank measures (Hypothesis 1). This means that children gave similar racial preference rankings and do not show any discrimination across the occupation conditions. However, we found a main effect of race as well as an interaction between race and occupation on racial preference in both the 1st choice measure and rank measure. Our hypothesis

that children will prefer their in-group within the occupation conditions was contradictory. Black children show a preference for darker faces (in-group) only in the control condition, but not in the occupation conditions. This finding aligns with prior research on children's association of skin color with attributes. Bigler and Liben (1993) found that European American children ages 4 to 9 associated lighter skin with positive characteristics. However, 4- to 7- year-old African American children do not associate darker skin tone with positive characteristics (Averhart and Bigler, 1997). In the context of this study we suggest that when Black children are presented with the context of occupation, they are more likely to associate their preferred adult with lighter skin tones. This may account for the unique variation in preference between the no occupation and occupational conditions. Furthermore, this data could be explained around stereotype threat, as African American children are more succeptible to stereotypes around blackness that hinder ones ability to associate black skin with the positive attributes of police officers, teachers, and doctors. For example, prior studies on 10-12 year old African American children found that the most common stereotype, *Blacks are less intelligent than Whites*, negatively impacted performance on a difficult language arts assessment (Shelvin et al., 2014). It is possible that this stereotype and others may influence childrens perceptions of adults of varying skin tones. However, further research needs to be conducted to probe for sterotype threat vulnerability in the context of this preferential sorting paradigm.

In our study, White and Other race children were found to have ambigious racial preference with no preference for a lighter or darker face compared to Black children. Prior research has also noted that implicit measures of bias have found that European Americans may report explicit pro-ingroup race bias during childhood, but that bias diminishes with age (Gibson & Rochat, 2017). Researchers accounted this shift in bias to the idea that individuals of a

majority group are motivated to appear unbiased. Similarly, we believe that the results of this study may be impacted by a shift in preference to appear unbiased. However, further research on children's motivation would need to be conducted to support this claim.

There was an interesting trend where across the 6 choice preference ranking, Black children typically preferred darker faces in the control condition. The finding that Black children prefer darker faces goes against prior literature that have found that Black 5-7 year old children show little to no pro-Black preference (Rochat & Gibson, 2017). This increased pro-Black preference amongst youth may be accounted for increased awareness of stereotypes with the Black Lives Matter movement, racial inequity, and perceptions in the media (Sawyer & Gampa, 2018).

Our data provided evidence that rejects our hypothesis of an age effect on racial preference (Hypothesis 2). This means that a child's age does not predict racial preference. Prior research has identified mixed results on the implications of racial preference and age within African American children. Our findings contradict with some findings of an age effect. For example, one study used a doll preference model to suggest that at 5-years, African American children have a higher preference for dolls that look like them (Rochat & Gibson, 2015). However, at 7-years African American children show a greater preference for the out-group lighter dolls. This shows a preference for lighter faces with increasing age possibly because of societal measures that attribute lighter characteristics with more positive attributes (Bigler and Liben, 1993). An alternative study noted that implicit measures of bias amongst African American children have been mixed with a split between pro-Black and pro-White preference across childhood and adulthood (Rochat & Gibson, 2017). Our data is consistent with this finding that there is no change in racial preference across age.

When considering the factors that impact the interaction between occupation and racial bias, we found that exposure to professionals did not play a role in influencing racial preference ratings (Hypothesis 3). This suggests that the race of a child's teacher, doctor, and police officer did not predict the racial preference a child reported. Although our study does not provide evidence to support the relationship between exposure and racial preference, it does not eliminate the importance of a child's environment in shaping preference. It is possible that there may be alternative factors that impact a child's exposure to professionals like media, which was not accounted for by our measure of exposure. Additionally, we used a parental report method of recording exposure so it is possible that there could be a difference between a parent's perception of occupational exposure and what the child actually experiences.

Implications

The most pertinent implication of studying racial bias and occupation lies in the fact that we need to further explore the interaction that takes place between children and their caretakers (teachers, doctors, and police officers). This was one of the first studies to explore occupation and racial preference with preferential sorting paradigms. Prior research has clearly highlighted the ways that adult's racial biases have negatively impacted children in the spheres of the clinic, classroom, and courtroom (Cheryl et al., 2017; Johnson et. al., 2016; Goff et al., 2014). Although these situations are impactful on children, much of the prior developmental implicit bias literature has been decontextualized. This project expanded the current body of literature by providing further evidence on the development of children's racial biases in order to better understand how children's beliefs are impacting the communication they have with adults. Implicit bias and racial trainings have been implemented in police stations and classrooms to diminish the racial disparities in these fields (Cheryl et al., 2017). However, the findings of this

study may prompt further need to study how racial bias is developing in children to implement bias trainings to increase communication, decrease negative stereotypes, and bridge open communication on the topic of race. Additionally, it is important to better understand the intersection of race and occupation to learn about children's sense of self. Varying levels of exposure to certain races performing jobs may shape children's notions of what is attainable. For example, if a child does not see individuals who look like them pursuing a certain career, they may be less likely to pursue that career. It is important to note that African American and European American children associate dark skin with negative characteristics (Averhart and Bigler, 1997). The formation of these biases transcend into adulthood where African Americans tend to be significantly more negatively stereotyped as unemployed, incarcerated, or poor when compared to European American characters (Penner and Saperstein, 2008). To better understand the development of these notions of preference, belief, and identity, we must understand the factors that play a role in the formation. This study found that occupation may be a significant player in the formation of racial biases, and further research needs to be conducted to understand the complex interaction.

Limitations and Future Directions

The results of the current study should be interpreted with several limitations in mind. First, the sample size of this study was small. By increasing sample size, researchers may be able to increase the power of study results. The environment of the children was not controlled for because the study was conducted virtually. Although we had children perform the tests in a quiet place or with headphones on, the environmental factors of audience and objects was not controlled. Additionally, it is possible that a child did not construe the 6 faces as different racial groups. In the future, one could use multiple proxies for race including facial shape and features

to better represent race. To better understand the role of occupation on racial preference, future research could utilize a within-subject longitudinal approach to studying the change in preference ratings across age.

References

Averhart, C. J., & Bigler, R. S. (1997). Shades of meaning: Skin tone, racial attitudes, and constructive memory in African American children. *Journal of Experimental Child Psychology*, *67*(3), 363-388.

Bigler, R. S., & Liben, L. S. (1993). A cognitive-developmental approach to racial stereotyping and reconstructive memory in Euro-American children. *Child development*, *64*(5), 1507-1518.

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the development of children*, *2*(1), 37-43.

Chen, F. M., Fryer, G. E., Jr, Phillips, R. L., Jr, Wilson, E., & Pathman, D. E. (2005). Patients' beliefs about racism, preferences for physician race, and satisfaction with care. Annals of family medicine, 3(2), 138–143. https://doi.org/10.1370/afm.282

Cheryl, S., et al. (2017). State of the science: Implicit bias review. *Race and Ethnicity: views from inside the conscious mind.*

Fitzpatrick, T.B. (1988). The validity and practicality of sun-reactive skin types I through VI. *Arch Dermatol.* 1988; 124: 869-871

Gibson, B., Robbins, E., Rochat, P. (2015). White Bias in 3-7-Year Old Children across Cultures. *Journal of Cognition and Culture*, 15, 344-373.

Gibson, B. L., Rochat, P., Tone, E. B., & Baron, A. S. (2017). Sources of implicit and explicit intergroup race bias among African-American children and young adults. *PloS one*, *12*(9), e0183015. https://doi.org/10.1371/journal.pone.0183015

Gilliam, W.S., et al., Do early educators' implicit biases regarding sex and race relate to behavior expectations and recommendations of preschool expulsions and suspensions? 2016, Yale University Child Study Center. p. 1–18.

Goff, P. A., Jackson, M. C., Di Leone, B. A. L., Culotta, C. M., & DiTomasso, N. A. (2014). The essence of innocence: consequences of dehumanizing Black children. *Journal of personality and social psychology*, *106*(4), 526.

Gupta, V., Sharma, V. (2019). Skin typing: Fitzpatrick grading and others. *Clinics in Dermatology*, *37*(5), 430-436.

Hines Shelvin, K., Rivadeneyra, R. & Zimmerman, C. (2014). Stereotype threat in African American children: The role of Black identity and stereotype awareness. *Revue internationale de psychologie sociale*, 3(3-4), 175-204.

Jin, K. S., & Baillargeon, R. (2017). Infants possess an abstract expectation of ingroup support. *Proceedings of the National Academy of Sciences*, *114*(31), 8199-8204.

Johnson, T. J., Winger, D. G., Hickey, R. W., Switzer, G. E., Miller, E., Nguyen, M. B., ... & Hausmann, L. R. (2017). Comparison of physician implicit racial bias toward adults versus children. *Academic pediatrics*, *17*(2), 120-126.

Ma, D. S., Correll, J., & Wittenbrink, B. (2015). The Chicago face database: A free stimulus set of faces and norming data. *Behavior research methods*, *47*(4), 1122–1135. https://doi.org/10.3758/s13428-014-0532-5

Na, C., & Gottfredson, D. C. (2013). Police officers in schools: Effects on school crime and the processing of offending behaviors. *Justice Quarterly*, *30*(4), 619-650.

Newheiser, A. K., & Olson, K. R. (2012). White and Black American Children's Implicit Intergroup Bias. *Journal of experimental social psychology*, *48*(1), 264–270. https://doi.org/10.1016/j.jesp.2011.08.011

Rhodes, M., & Baron, A. (2019). The Development of Social Categorization. *Annual review of developmental psychology*, *1*, 359–386. https://doi.org/10.1146/annurev-devpsych-121318-084824

Sabin, J. A., & Greenwald, A. G. (2012). The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma. *American journal of public health*, *102*(5), 988–995. https://doi.org/10.2105/AJPH.2011.300621

Sawyer, J., & Gampa, A. (2018). Implicit and explicit racial attitudes changed during Black Lives Matter. *Personality and Social Psychology Bulletin*, *44*(7), 1039-1059.

Tajfel, H. and Turner, J.C. (1986). The social identity theory of inter-group behavior. In Worchel, S. and Austin, L.W. (Eds), *Psychology of Intergroup Relations*, pp. 7-24. Nelson-Hall, Chicago, IL.

Vargas, Cindy Veronica. (2012). "What Are You? A Study Of Racial Ambiguity". *Wayne State University Theses*. Paper 219.

Table 1
Results of Mixed Design ANOVA on Preference Ranking, Occupation, and Gender

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Preference Ranking	148.4	5	29.68	8.896	.001***
Preference Ranking ✻ Occupation	21.3	15	1.42	0.426	0.972
Preference Ranking ✻ Gender	28.3	5	5.65	1.693	0.134
Preference Ranking ✻ Occupation ✻ Gender	37.2	15	2.48	0.743	0.742
Residual	2135.3	640	3.34		

Note. *** p<.001, ** p< .01 , * p< .05

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Occupation	0.0889	3	0.0296	1.8557	0.140
Gender	2.11e-4	1	2.11e-4	0.0132	0.909
Occupation ✻ Gender	6.32e-4	3	2.11e-4	0.0132	0.998
Residual	2.0433	128	0.0160		

Note. *** p<.001, ** p< .01 , * p< .05

Table 2

Results of Kruskal-Wallis on Child's Self Identification and Parental Racial Categorization

Kruskal-Wallis

	χ^2	df	p
Child's Self Identification	17.6	2	< .001***

Note. *** p<.001, ** p< .01 , * p< .05

Table 3

Results of Kruskal-Wallis on Racial Preference Grouped By Occupation

Kruskal-Wallis			
	χ^2	**df**	**p**
Choice 1	0.795	3	0.851
Choice 2	2.132	3	0.545
Choice 3	1.023	3	0.796
Choice 4	1.258	3	0.739
Choice 5	0.742	3	0.863
Choice 6	0.506	3	0.918

Note. *** p<.001, ** p< .01 , * p< .05

Table 4

Results of Mann-Whitney t-tests on First Choice Racial Preference by Occupation and Race

			Statistic	p	Effect Size
Black vs. White	Control	Mann-Whitney	37.5	0.017*	0.519
	Teacher	Mann-Whitney	75.5	0.910	0.032
	Doctor	Mann-Whitney	75.5	0.909	0.032
	Police Officer	Mann-Whitney	67.5	0.575	0.135
Black vs. Other	Control	Mann-Whitney	26.5	0.019*	0.5583
	Teacher	Mann-Whitney	45.5	0.340	0.2417
	Doctor	Mann-Whitney	45.0	0.327	0.2500
	Police Officer	Mann-Whitney	58.5	0.946	0.0250
White vs. Other	Control	Mann-Whitney	57.5	0.647	0.115
	Teacher	Mann-Whitney	51.0	0.385	0.215
	Doctor	Mann-Whitney	53.5	0.479	0.177
	Police Officer	Mann-Whitney	54.0	0.501	0.169

Note. *** p<.001, ** p< .01 , * p< .05

Table 5

Results of Mixed Design ANOVA on Racial Preference Ranking, Race, Occupation, and Age

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Preference Ranking	14.4	5	2.88	0.911	0.473
Preference Ranking ✻ Occupation	21.1	15	1.41	0.445	0.965
Preference Ranking ✻ Age (Months)	12.8	5	2.56	0.809	0.544
Preference Ranking ✻ Race	91.5	10	9.15	2.890	0.002**
Preference Ranking ✻ Occupation ✻ Race	153.8	30	5.13	1.620	0.020*
Residual	2009.4	635	3.16		

Note. *** p<.001, ** p< .01 , * p< .05

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Occupation	0.0973	3	0.03242	2.08481	0.105
Race	0.0172	2	0.00862	0.55421	0.576
Occupation ✻ Race	0.0545	6	0.00908	0.58373	0.743
Age (Months)	8.19e-5	1	8.19e-5	0.00526	0.942
Residual	1.9749	127	0.01555		

Note. *** p<.001, ** p< .01 , * p< .05

Table 6

Results of Mann-Whitney t-tests for Preference Rankings of Black and White Children

			Statistic	**p**
Control	Rank 1	Mann-Whitney U	30.5	0.005*
	Rank 2	Mann-Whitney U	63.0	0.417
	Rank 3	Mann-Whitney U	68.0	0.596
	Rank 4	Mann-Whitney U	70.5	0.696
	Rank 5	Mann-Whitney U	21.0	0.001*
	Rank 6	Mann-Whitney U	40.0	0.037
Teacher	Rank 1	Mann- Whitney U	77.5	1.000
	Rank 2	Mann-Whitney U	69.0	0.632
	Rank 3	Mann-Whitney U	66.5	0.542
	Rank 4	Mann-Whitney U	58.0	0.278
	Rank 5	Mann-Whitney U	38.0	0.027
	Rank 6	Mann-Whitney U	71.5	0.739
Doctor	Rank 1	Mann-Whitney U	75.5	0.909
	Rank 2	Mann-Whitney U	71.5	0.739
	Rank 3	Mann-Whitney U	71.5	0.738
	Rank 4	Mann-Whitney U	62.0	0.387
	Rank 5	Mann-Whitney U	51.0	0.140
	Rank 6	Mann-Whitney U	61.5	0.372
Police Officer	Rank 1	Mann-Whitney U	63.5	0.433
	Rank 2	Mann-Whitney U	52.5	0.167
	Rank 3	Mann-Whitney U	52.5	0.167
	Rank 4	Mann-Whitney U	13.0	<.001
	Rank 5	Mann-Whitney U	48.5	0.109
	Rank 6	Mann-Whitney U	65.5	0.506

Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

Table 7

Results of Mann-Whitney t-tests for Preference Rankings of Other, Black, and White children

Independent Samples T-Test

			Statistic	p
Black and Other	Rank 1	Mann-Whitney U	23.0	0.011
	Rank 2	Mann-Whitney U	58.5	0.945
	Rank 3	Mann-Whitney U	55.0	0.761
	Rank 4	Mann-Whitney U	43.5	0.272
	Rank 5	Mann-Whitney U	48.0	0.420
	Rank 6	Mann-Whitney U	47.0	0.394
White and Other	Rank 1	Mann-Whitney U	51.5	0.390
	Rank 2	Mann-Whitney U	61.5	0.849
	Rank 3	Mann-Whitney U	52.0	0.428
	Rank 4	Mann-Whitney U	54.5	0.524
	Rank 5	Mann-Whitney U	37.5	0.087
	Rank 6	Mann-Whitney U	48.5	0.314

Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

Table 8

Results of a Mixed Design ANOVA on Preference Ranking, Occupation, and Parents Rating of Children's Exposure

Within Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Preference Ranking	99.9	5	19.97	5.911	< .001
Preference Ranking ✻ Parent's Rating of Children's Exposure	102.6	25	4.10	1.214	0.221
Preference Ranking ✻ Occupation	18.9	10	1.89	0.560	0.846
Preference Ranking ✻ Parent's Rating of Children's Exposure ✻ Occupation	139.7	50	2.79	0.827	0.793
Residual	1317.8	390	3.38		

Note. Type 3 Sums of Squares

Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p
Parent's Rating of Children's Environment	0.1353	5	0.0271	1.343	0.255
Occupation	0.0329	2	0.0165	0.817	0.446
Parent's Rating of Children's Exposure ✻ Occupation	0.2887	10	0.0289	1.433	0.182
Residual	1.5714	78	0.0201		

Note. Type 3 Sums of Squares

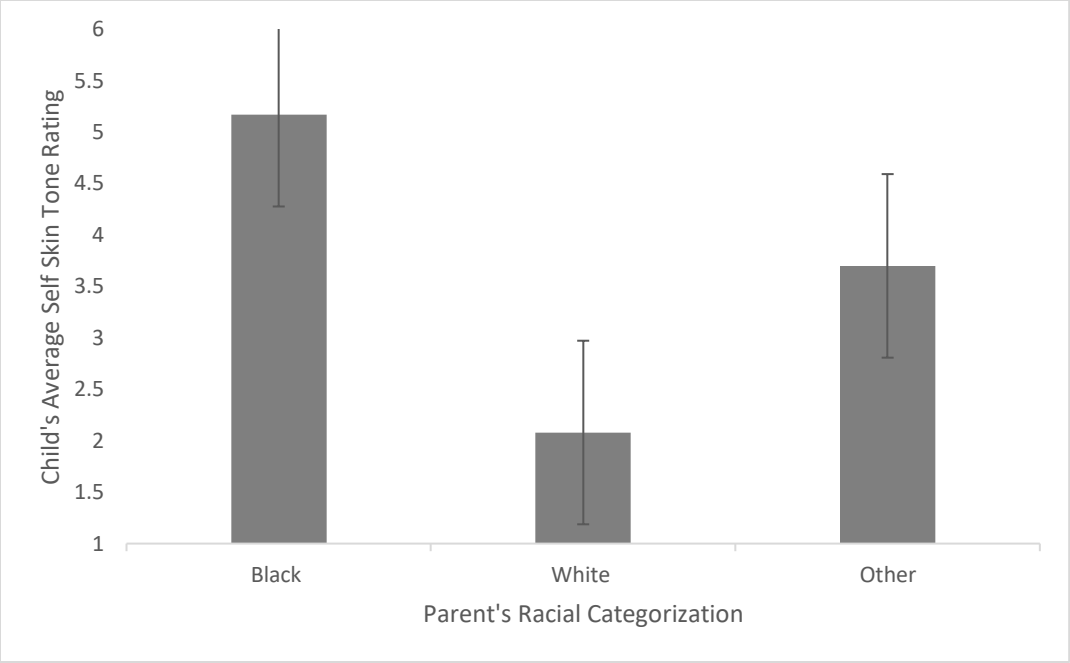

Figure 1. The relationship between child's average self-skin tone rating and parent's racial categorization.

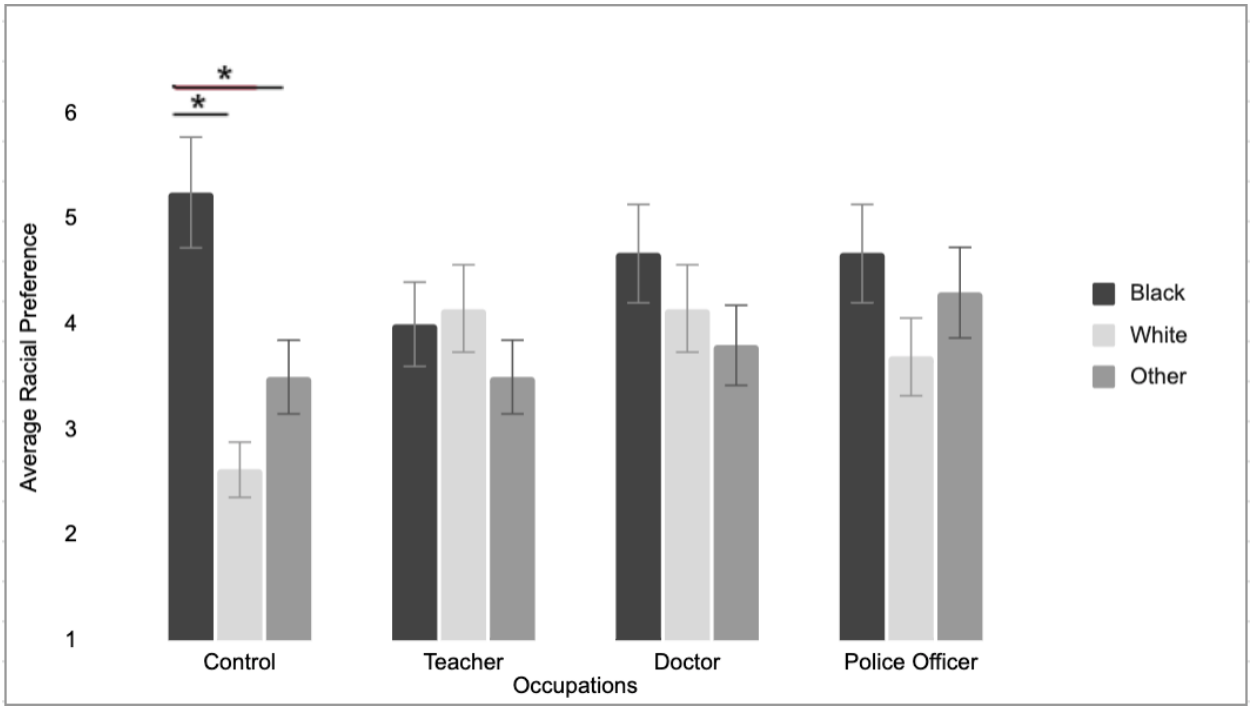

Figure 2. The relationship between average racial preference, occupation, and race in the first choice condition. Note. *** p<.001, ** p< .01 , * p< .05

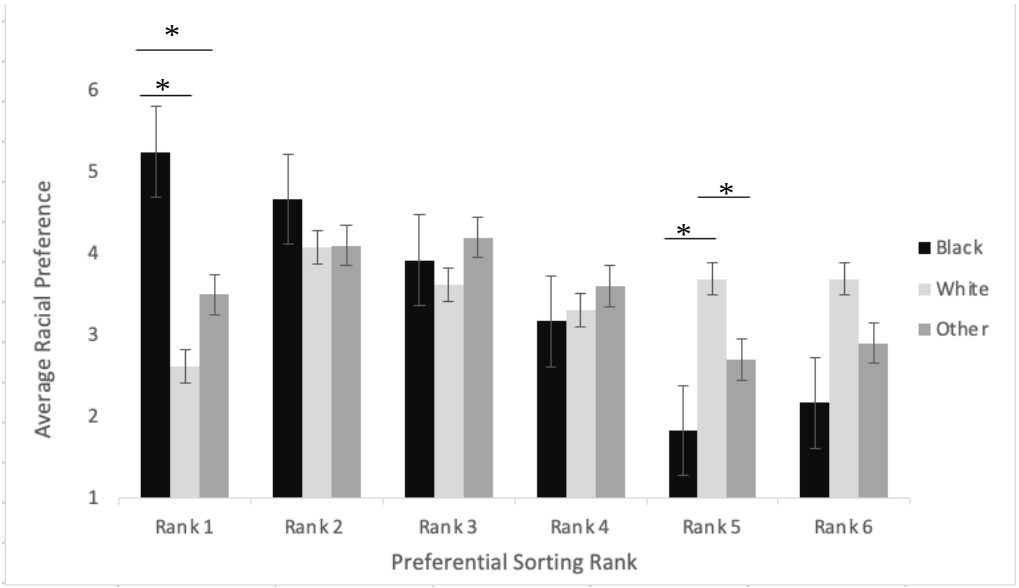

Figure 3. **The average racial preference within the no occupation condition by race.** Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

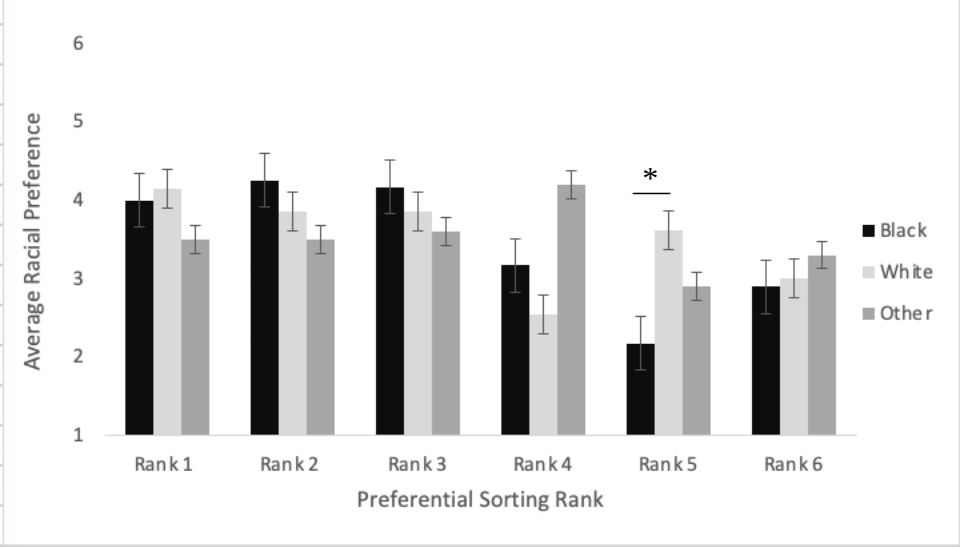

Figure 4. The average racial preference for Black and White children within the teacher condition by race. Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

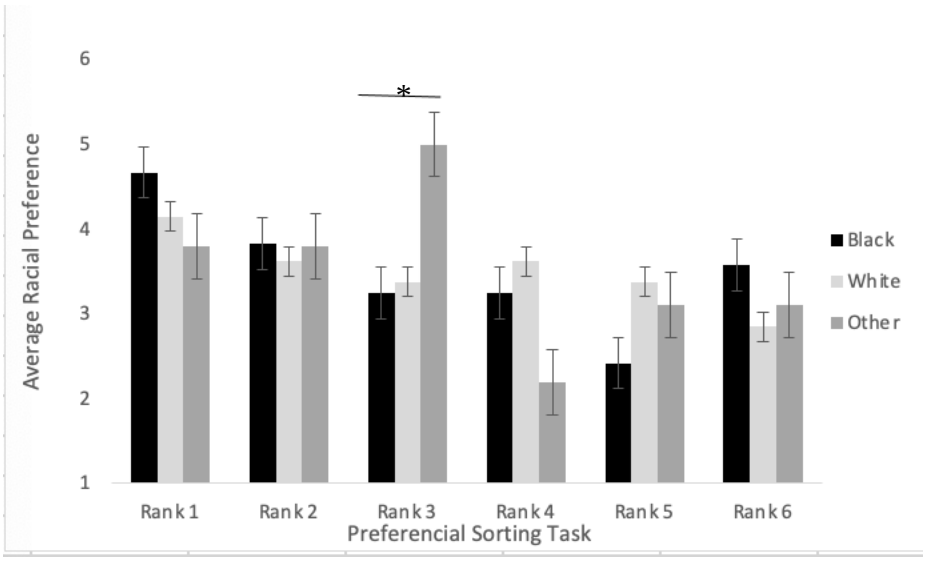

Figure 5. The average racial preference for Black and White children within the doctor condition by race. Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

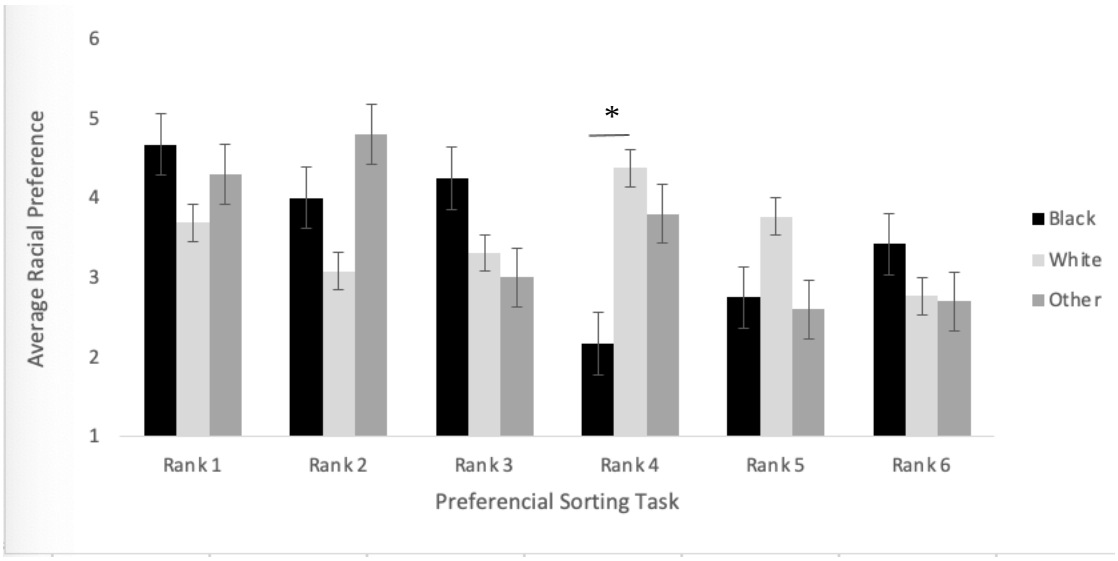

Figure 6. The average racial preference for Black and White children within the police officer condition by race. Note. Bonferroni post-hoc corrected p-value=.008. * p<.008

Appendix A

Child Demographics Questionnaire

Child's ID #

Child's Date of Birth

Child's Age (years)

Child's Gender: Male or Female

Is English spoken in the home: Yes or No

Are there languages other than English spoken in the home?: Yes or No

If yes, what language(s)?

If yes, what is the primary language

If you chad to choose a category to describe your family's race, which of the following would you choose?

White (non Hispanic/Spanish/Latino), Hispanic/Spanish/Latino, Black or African American, Asian, Two or more races, Other ____

What is the highest level of school you have completed or the highest degree you have received?

Less than high school degree, High school graduate, Some college but no degree, Associate degree in college (2-year), Bachelor's degree in college (4-year), Master's degree, Doctoral degree, Professional degree (JD/MD)

What is your occupation?

Professional (Doctor, Teacher, Engineer, Artist, Accountant, Lawyer)

Higher Administrator(banker, executive, high government official, union official), Management, Clerical(clerk, office manager, secretary, bookkeeper), Sales(sales manager, shop owner, shop

assistant, buyer, insurance agent), Service(Restaurant Owner, policeman, barber, janitor), Skilled worker(foreman, motor mechanic, printer, seamstress, tool and die maker, electrician), Semi-skilled(bricklayer, bus driver, tannery walker, carpenter, sheet, metal worker, baker), Unskilled (Laborer, porter, unskilled factory worker), Farm(farmer, farm laborer, tractor driver), Stay-at-home parent, Unemployed

Other caregiver's occupation (spouce, partner, etc)?

Professional (Doctor, Teacher, Engineer, Artist, Accountant, Lawyer) Higher Administrator(banker, executive, high government official, union official), Management, Clerical(clerk, office manager, secretary, bookkeeper), Sales(sales manager, shop owner, shop assistant, buyer, insurance agent), Service(Restaurant Owner, policeman, barber, janitor), Skilled worker(foreman, motor mechanic, printer, seamstress, tool and die maker, electrician), Semi-skilled(bricklayer, bus driver, tannery walker, carpenter, sheet, metal worker, baker), Unskilled (Laborer, porter, unskilled factory worker), Farm(farmer, farm laborer, tractor driver), Stay-at-home parent, Unemployed

Appendix B

Child Environmental Questionnaire

Based on skin tone, which picture reflects your child's teacher the most?

Based on skin tone, which picture reflects your child's pediatrician the most?

Based on skin tone, which picture reflects your child's local law enforcement (police officers) the most?

Appendix C

Script to Parent:

Hello! How are y'all doing today? So my name is Dominic. I am going to take a few minutes to explain what we are going to do today. The first step is to get parental consent so I am going to walk through this document and then you can ask any questions. After we finish the consent I am going to ask that your child is left alone to play the game and you (the parent) complete the parental questionnaire we emailed to you.

Present the informal consent document and have parental assent recorded

So it's really important that we observe children's natural responses and often times the presence of anyone other than the researcher can influence our results. Would it be possible to have your child perform the task in a place free from distractions? Headphones are also encouraged because that can also help your child focus.

So we are going to be playing some games where we are going to talk and I am going to show you some pictures. You can use the numbers on the screen to let me know which one you like the most! The first game is about some things. Are you ready to play?

Practice Trial (pictures of 6 foods)

- Ok I want you to look at these pictures. Do you see them? Are these pictures the same?
  - ◊ *If no= So what is different about them?*
  - ◊ *If yes= Hmm are you sure, can you look again? Are these pictures the same?*
- That's right, these are pictures of different foods.
- Out of these foods, which do you like the most?
  - ◊ *If none=If you had to choose, who do you like the most? Why?*
- Hmm ok, now which one do you prefer? Why?
- Alright and now which one do you prefer? Why?
- Got it, and now which one do you prefer? Why?
- Ok, now which one do you prefer? Why?

Awesome Job playing that last game with me! The next game is about some people. Are you ready to play the next game?

Control

- Ok now I want you look at these people. Do you see them? Are these people the same?
  - ◊ *If no= So what is different about them?*
  - ◊ *If yes= Hmm are you sure, can you look again? Are these pictures the same?->So what is different about them?"*
- That's right, these people are different.
- Out of these people, who do you like the most?
  - ◊ *If no= If you had to choose, which one would you prefer? Why?*
  - ◊ *If yes= Can you tell me which one you prefer? Why?*

- Ok, and now. Out of these people, who do you like the most? Why?
- Alright, and now who do you like the most? Why?
- Ok, and now. Out of these people who do you like the most? Why?
- Alright, and now who do you like the most? Why?

Awesome Job playing that last game with me! The next game is about some doctors. Are you ready to play the next game?

Doctor

- Now I want you to look at these pictures. These are all doctors. Do you know what doctors do?
  - ◊ Yes= That's right, *So you know doctors try to help children feel better with medicine.*
  - ◊ No=*Oh ok, Have you been sick before? It's not very fun is it? You know doctors try to help children feel better with medicine. So let me ask you, do you know what a doctor does now?*
- Out of these doctors, who do you like the most? Why?
  - ◊ *If none=If you had to choose, which doctor would you prefer? Why?*
- Hmm ok, and now out of these doctors, who do you like the most? Why?
- Alright, and now. out of these doctors, who do you like the most? Why?
- Got it, and now out of these doctors, who do you like the most? Why?
- Ok, and now. Out of these doctors, who do you like the most? Why?

Awesome Job playing that last game with me! The next game is about some teachers. Are you ready to play the next game?

Teacher

- Now I want you to look at these pictures. These are all teachers. Do you know what teachers do?
  - ◊ *Yes*= That's right, *so you know teachers try to help children learn new things.*
  - ◊ *No= What do you do in school? Do you learn stuff in school? You know teachers try to help children learn new things. So let me ask you, do you know what a teacher does now?*
- Out of these teachers, who do you like the most?
  - ◊ *If no=If you had to choose, which teacher would you prefer? Why?*
  - ◊ *If yes=Can you tell me which teacher you prefer? Why?*
- Hmm ok, and now. Out of these teachers, who do you like the most? Why?
- Alright and now out of these teachers. Who do you like the most? Why?
- Got it, and now. Out of these teachers, who do you like the most? Why?
- Ok, and now. Out of these teachers, who do you like the most?

Awesome Job playing that last game with me! The next game is about some police officers. Are you ready to play the next game?

Police Officer

- Now I want you to look at these pictures. These are all police officers. Do you know what police officers do?
  - ◊ *Yes*= That's right, *so you know police officers try to keep the neighborhood safe by patrolling.*
  - ◊ *No= Have you seen a police car before? You know police officers try to keep the neighborhood safe by patrolling. So let me ask you, do you know what a police officer does now?*
- So out of these police officers, who do you like the most?
  - ◊ *If none=If you had to choose, who do you like the most? Why?*
- Hmm ok, and now. Out of these police officers, who do you like the most? Why?
- Alright and now out of these police officers. Who do you like the most? Why?
- Got it, and now. Out of these police officers, who do you like the most? Why?
- Ok, and now. Out of these police officers, who do you like the most? Why?

Identity

- Ok now I want you look at these people. Which person is most like you?

Awesome job playing that last game with me! I now have one more thing to go over and then you can ask me any questions you have.
Go through debrief form